

1 Lake Rotoehu

Nutrient Sources (load to lake kg/yr)		
	N	P
Native	5,492	165
Urban	1,790	92
Rural	38,224	1,287
Rain	2,881	131
Geothermal	4,700	800
TOTAL Inflows	53,087	2,475

Established	2007
3 yr av. TLI (2007)	4.6
TLI 2012	4.2
TLI Target	3.9

Nutrient Reduction Targets	Achieved Feb 2012
N 8,880 kg/yr P 708 kg/yr	N 6,796 kg/yr P 2,469 kg/yr

Success	Year			Contribution to target Y/N
	2012	2013	2014	
✓ Aeration/destratification devices established (April 2012)	✓			Y
✓ Undertake weed harvest				Y
✓ Bio-treatment of Ōtautū Bay				Y
✓ Commissioned P locking plant				Y
✓ Established floating wetland				Y
✓ Secured Land Use Change Agreement retiring 600+ ha to trees				Y

Actions and Achievements								
	Nutrient loss reduction targets (kg/yr)		Achieved (kg/yr) (current or negotiated reductions)		Annual reduction (kg/yr)		Long term reduction (kg/yr)	
	N	P	N	P	N	P	N	P
Constructed wetland/Floating wetland	1,650	0	307	0	307	0	307	0
Riparian protection & environmental programmes	542	249	0	700	0	700	0	700
Land use/land management changes	6,688	459	2,289	509	2,289	509	2,289	509
P locking				700		700		
Hornwort harvesting (10-year programme)	2,400*	320*	4,200	560	4,200	560		
Total	8,880	708						
<i>N removal from septic tanks (80% N) NB not part of action plan</i>	470	0						
Regulation	<i>Under consideration</i>							
Achieved			6,796	2,469	6,796	2,469	2,596	1,209
Target			8,880	708	8,880	708	8,880	708

* Hornwort harvesting not included in target totals

Just totally remove septic tanks if not relevant. The statement will be political to the community. I suggest leave out the 'to do' line. It should be a statement about actions not numerical.

2 Lake Rotoma

OLIGOTROPHIC

Nutrient Sources (load to lake kg/yr)		
	N	P
Native forest	2,106	50
Exotic forest	795	25
Dairy	2,080	28
Sheep/beef	6,345	162
Septic tanks	2,530	250
Stormwater	144	34
Rainfall to lake	4,014	178
Other	96	9
TOTAL Inflows (kg/yr)	18,110	736

Established	2009
3 yr av. TLI (2009)	2.5
TLI 2012	2.5
TLI Target	2.3

Nutrient Reduction Targets	Achieved
N 1,320 kg/yr P 250 kg/yr	Nutrient reductions have not yet been quantified

Success	Year			Contribution to target Y/N
	2012	2013	2014	
✓ Riparian protection	Y			Y

Actions and Achievements								
	Nutrient loss reduction targets kg/yr		Achieved (kg/yr) (current or negotiated reductions)		Annual reduction (kg/yr)		Long term reduction (kg/yr)	
	N	P	N	P	N	P	N	P
Reticulate and upgrade on-site effluent treatment systems								
RDC review the adequacy of the existing public toilet facilities								
Adopt stewardship approach to farm land management								
Investigate and monitor the use of innovative technologies								
Wetland planting programme								
Adopt stewardship approach to forestry management								
Investigation of alternative land uses								
Support research on phosphorus loss via groundwater and subsurface water flows and sample waterbodies in catchment for phosphorus levels								
Review and develop regulatory rules								

Nutrient reductions associated with these actions has not been quantified

3 Lake Tikitapu

OLIGOTROPHIC

Nutrient Sources (load to lake kg/yr)		
	N	P
Native forest	1175	35
Exotic forest	204	6
Dairy	0	0
Sheep/beef	71	8
Septic tanks	700	70
Stormwater	310	4
Rainfall to lake	12	0
Other	30	3
TOTAL Inflows (kg/yr)	2,502	125

Established	2011
3 yr av. TLI (2011)	3.1
TLI (2012)	2.9
TLI Target	2.7

Nutrient Reduction Targets	Achieved
N 701-822 kg/yr P 21-31 kg/yr	N 700 kg/yr P 70 kg/yr

Success	Year			Contribution to target Y/N
	2012	2013	2014	
✓ Sewerage reticulation	Y			Y

Actions and Achievements								
	Nutrient loss reduction targets kg/yr		Achieved (kg/yr) (current or negotiated reductions)		Annual reduction (kg/yr)		Long term reduction (kg/yr)	
	N	P	N	P	N	P	N	P
Reticulation of septic tanks - completed in October 2010	700	70	700	70	700	70	700	70
Regional policy direction - nutrient discharge limits for Rotorua (decision released in 2012)								
: TLI and de-oxygenation rates monitored monthly								
Bathing water quality during swimming season monitored fortnightly								
Lake water quality reported to community annually								
Achieved			700	70	700	70	700	70
Target			700	70	700	70	700	70

Nutrient reductions associated with these actions has not been quantified

4 Lake Okareka

MESOTROPHIC

Nutrient Sources (load to lake kg/yr)		
	N	P
Native forest	1,920	31
Exotic forest	425	6.8
Dairy	0	1
Sheep/beef	4,060	174
Septic tanks	2,376	20
Stormwater	133	30
Rainfall to lake	1,300	0
Other	264	16
TOTAL Inflows (kg/yr)	10,478	279
Internal loading	500	130

Established	2004
3 yr av. TLI (2004)	3.2
TLI (2012)	3.4
TLI Target	3.0

Nutrient Reduction Targets	Achieved
N 2,500 kg/yr P 80 kg/yr	N 2,495 kg/yr P 220 kg/yr
<i>Nitrogen and phosphorus reduction targets are met according to models</i>	

Success	Year			Contribution to target Y/N
	2012	2013	2014	
✓ Sewerage reticulation				Y
✓ Converted 122 ha to forestry and native bush				Y

Actions and Achievements								
	Nutrient loss reduction targets kg/yr		Achieved (kg/yr) (current or negotiated reductions)		Annual reduction (kg/yr)		Long term reduction (kg/yr)	
	N	P	N	P	N	P	N	P
Land use change			550	30	550	30	550	30
Reticulation			2,765	227	2,764	227	2,764	227
Wetland development	300	10	45		45		45	
Regulation	<i>Under consideration</i>							
<i>To confirm</i>								
Achieved			3,360	260	3,360	260	3,360	260
Total Action Plan Target			2,500	80	2,500	80	2,500	80

5 Lake Okaro

SUPERTROPHIC

Nutrient Sources (load to lake kg/yr)		
	N	P
Native forest	33	1
Exotic forest	49	0.8
Dairy	575	69
Sheep/beef	1,663	261
Other	268	64
TOTAL Inflows (kg/yr)	2,588	396
<i>Internal loading</i>	2,400	380

TLI (2012)	3.4
3 yr av. TLI (2006)	5.5
TLI (2012)	5.5
TLI Target	5.0

Nutrient Reduction Targets	Achieved
N 910 kg/yr P 20 kg/yr	<i>Nutrient reductions achieved has not been quantified</i>
<i>2011-12 results showed an increase in total phosphorus due to heavy rainfall event (May) seeing the TLI increase</i>	

Success	Year			Contribution to target Y/N
	2012	2013	2014	
✓ Further 26 ha converted to pine plantation				Y
✓ Stock yards located on lease land (close to lake) decommissioned				Y

Actions and Achievements								
	Nutrient loss reduction targets kg/yr		Achieved (kg/yr) (current or negotiated reductions)		Annual reduction (kg/yr)		Long term reduction (kg/yr)	
	N	P	N	P	N	P	N	P
In-lake phosphorus-absorbent cap (not part of catchment nutrient reduction)	240	380	<i>Nutrient reductions associated with these actions has not been quantified</i>					
Constructed wetland	348	16			149	30		
Riparian: fencing, planting, restoration	423	37						
Best management practices	139	0						
Regulation	<i>Under consideration</i>							
Total	910	53						

6 Lake Rotorua

MESOTROPHIC

Established	2009
3 yr av. TLI (2009)	4.8
TLI (2012)	4.1
TLI Target	4.2

Nutrient Reduction Targets	Achieved
N 250 tonnes/yr P 10 tonnes/yr	N 250 tonnes/yr P 10 kg/yr
<i>Progress is slow for nitrogen by more positive for phosphorus (through the Utuhina and Puarenga P-locking plants)</i>	

✓ TLI below its objective for the first time since programme began in 1991

Nutrient Sources (load to lake tonnes/yr)		
	N	P
Rural sources (exotic forest, cropping, horticulture, pasture, lifestyle)	619	19
Natural sources	115	17.8
Urban land use	50	3.8
TOTAL Inflows	784	41
Internal	360	36

	Year			
Success	2012	2013	2014	Contribution to target Y/N
✓P reduction through Utuhina and Puarenga P-locking plants	Y			partly
Reticulation	Y			Y

Actions and Achievements								
	Nutrient loss reduction targets tonnes/yr		Achieved (tonnes/yr) (current or negotiated reductions)		Annual reduction (tonnes/yr)		Long term reduction (tonnes/yr)	
	N	P	N	P	N	P	N	P
Reducing nutrients from lakebed sediments (not part of inflow target)	-	25		16		16		25
Land use	170	10	4					
P locking Utuhina	-	2	0	2				
P locking Puarenga	-	4	0	4				
Waste water treatment plant improvements	15	-						
Reticulation	10.8	0.3	4.2	0.4	4.2	0.4	4.2	0.4
Tikitere Geothermal field treatment	30	-						
Stormwater upgrades	3	0.5						
Regulation	<i>Under consideration</i>							
Total			8.2	6.4	4.2	0.4	4.2	0.4
<i>To do</i>			241.8	3.6				
Total Action Plan inflow Target	250	10	250	10	250	10	250	10

7 Lake Rotoiti

MESOTROPHIC

Nutrient Sources (load to lake tonnes/yr)		
	N	P
Natural inputs (indigenous forest, natural springs, rainwater, geothermal activity)	67.6	1.1
Urban land use (septic tank discharges)	5.9	0.21
Internal	50	20
TOTAL Inflows	124	21

Established	2009
3 yr av. TLI (2009)	4.0
TLI (2012)	3.8
TLI Target	3.5

Nutrient Reduction Targets	Achieved
N 130 tonnes/yr P 19 tonnes/yr	N 180 tonnes/yr P 19 kg/yr
<p><i>The Lake Rotoiti sediment capping proposal (\$7 million) is now considered unnecessary given the success of the Ohau diversion wall. However on-going lake monitoring will clarify if future sediment treatment is needed.</i></p>	

✓N + P reduction targets reached

	Year				
Success	2012	2013	2014	Contribution to target Y/N	
Fencing and retiring lake margins from stock completed				Yes	

Actions and Achievements								
	Nutrient loss reduction targets tonnes/yr		Achieved (tonnes/yr) (current or negotiated reductions)		Annual reduction (tonnes/yr)		Long term reduction (tonnes/yr)	
	N	P	N	P	N	P	N	P
Ohau Channel Diversion Wall	150	15	150	15	150	15		
Community wastewater reticulation	5.9	0.21	5	0.4	5	0.4	5	0.4
Lakebed cap	<i>Considered unnecessary given the success of the Ohau diversion wall. On-going lake monitoring will clarify if future sediment treatment is needed.</i>							
Water-edge protection	<i>Nutrient reductions associated with these actions has not been quantified</i>							
Regulation	<i>Under consideration</i>							
Total			155	15.4	155	15.4	5	0.4
<i>To do</i>				3.6		3.6		
Total Action Plan Target	130	19	130	19	130	19	130	19

8 Lake Ōkātina (draft)

OLIGOTROPHIC

Nutrient Sources (load to lake kg/yr)		
	N	P
Native bush	12,743	1,185
Grassland (pasture)	8,134	541
Rainfall	4,338	166
Exotic forest	1,627	166
Stormwater	81	-
Septic tanks	108	10
TOTAL Inflows	27,112	2,079

Established	Draft
3 yr av. TLI (2012)	2.9
TLI (2012)	3.0
TLI Target	2.6

Nutrient Reduction Targets	Achieved
N 860 kg/yr P 380 kg/yr	<i>These are draft targets. The draft action plan is currently in consultation with stakeholders</i>

	Year			
Success	2012	2013	2014	Contribution to target Y/N
Fencing and retiring lake margins from stock completed				Yes

Actions and Achievements								
	Nutrient loss reduction targets tonnes/yr		Achieved (tonnes/yr) (current or negotiated reductions)		Annual reduction (tonnes/yr)		Long term reduction (tonnes/yr)	
	N	P	N	P	N	P	N	P
Voluntary land use change	860							
Actions to reach P target undergoing research		?						
f	860	-						